at1121exam_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v11)

- If you are looking for a practice exam that you can hand in for credit:

https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html

Question 1

Simplify the radical expressions.

$\sqrt{27}$ $\sqrt{8}$ $\sqrt{20}$

$\sqrt{3 \cdot 3 \cdot 3}$ $\sqrt{2 \cdot 2 \cdot 2}$ $\sqrt{2 \cdot 2 \cdot 5}$

$3\sqrt{3}$ $2\sqrt{2}$ $2\sqrt{5}$

Question 2

Find all solutions to the equation below:

$$2\left((x+10)^2 - 3\right) = 44$$

First, divide both sides by 2.

$$(x+10)^2 - 3 = 22$$

Then, add 3 to both sides.

$$(x+10)^2 = 25$$

Undo the squaring. Remember the plus-minus symbol.

$$x + 10 = \pm 5$$

Subtract 10 from both sides.

$$x = -10 \pm 5$$

So the two solutions are $x = -5$ and $x = -15$.

Question 3

By completing the square, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 + 10x = -16$$

Take the linear coefficient, 10, halve it and square the result. You should get 25. Add this to both sides of the equation to complete the square.

$$x^2 + 10x + 25 = -16 + 25$$

$$x^2 + 10x + 25 = 9$$

Factor the perfect-square trinomial.

$$(x + 5)^2 = 9$$

$$x + 5 = \pm 3$$

$$x = -5 \pm 3$$

$$x = -2 \quad \text{or} \quad x = -8$$

Question 4

A quadratic polynomial function is shown below in standard form.

$$y = 4x^2 - 24x + 27$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 4 .

$$y = 4(x^2 - 6x) + 27$$

We want a perfect square. Halve -6 and square the result to get 9 . Add and subtract that value inside the parentheses.

$$y = 4(x^2 - 6x + 9 - 9) + 27$$

Factor the perfect-square trinomial.

$$y = 4((x - 3)^2 - 9) + 27$$

Distribute the 4.

$$y = 4(x - 3)^2 - 36 + 27$$

Combine the constants to get **vertex form**:

$$y = 4(x - 3)^2 - 9$$

The vertex is at point $(3, -9)$.